## MANAGEMENT CHALLENGES AND OPPORTUNITIES

The management goals, objectives, and strategies for the South Grand Watershed were developed using information collected from the South Grand Watershed Inventory and Assessment (WIA) and direction provided by the Missouri Department of Conservation (MDC) West Central Regional Management Guidelines (1998), Kansas City Regional Management Guidelines 1999, Missouri Department of Conservation Strategic Plan, and the Fisheries Division Five Year Strategic Plan. Objectives and strategies were written for riparian and aquatic habitat, water quality, aquatic biota, and promotion of public awareness and use. All goals are of equal importance, with objectives listed in prioritized order whenever possible. This plan includes only those activities and results that can reasonably be expected to be achieved or influenced during the next 25 years. Completion of these objectives will depend upon their status in overall regional and division priorities and the availability of human resources and funds.

GOAL I: PROTECT AND IMPROVE RIPARIAN AND AQUATIC HABITATS IN THE SOUTH GRAND WATERSHED.

Status: Many streams in various portions of the watershed lack sufficient riparian corridors. Streams within the Camp Branch Hydrologic Unit have the least percentage of forested riparian corridors. In addition, channelization, levees, and impoundment have significantly altered stream and riparian habitats in the watershed, with the South Grand and Big Creek having the longest channelized sections and the lower floodplains of these streams also having the most extensive leveeing. The impoundment and highly variable lake stages of Truman Reservoir have altered or eliminated many miles of streams in the lower portion of the watershed. Past problems with the formation of large logjams which have been blamed for flooding roads and property is yet another concern. Improper bridge design, construction, and maintenance is a potential problem in all watersheds.

Objective 1.1: With the assistance of willing landowners, over a 25-year period, increase by 25% the proportion of streams with a sufficient forested corridor as defined in NRCS (2000).

Strategy: Referencing the priority ranking for hydrologic units of the South Grand Watershed presented in Figure Mp01 (developed through evaluations of riparian land cover, concentrated animal feeding operations, miles of state listed impaired stream, and relative hydrologic unit size), direct appropriate riparian corridor improvement efforts towards the following ranked drainage units: High= Middle South Grand and Truman Reservoir-Deepwater Creek; Medium= Truman Reservoir-Tebo Creek, Lower Big Creek, and Truman Reservoir-South Grand; Low= Upper South Grand, Upper Big Creek, East Branch South Brand, Crawford Creek, Camp Branch, South Fork, and Honey Creek.

1. Using satellite imagery, aerial photography, aerial stream survey documentation, and/or field investigations, document the conditions of riparian corridors and stream banks once every 10 years.

Future projects such as the Missouri Resource Assessment Partnership Land Cover Classification should be encouraged in order to ensure that adequate data is available to allow efficient analysis of riparian corridor conditions over time.

- 2. Ensure all MDC Areas represent examples of proper riparian corridor stewardship by following established best management practices for riparian restoration/protection.
- 3. In cooperation with regional Private Land Services Division personnel, provide appropriate agencies such as Natural Resources Conservation Service (NRCS) and Soil and Water Conservation Districts (SWCDs) as well as willing agricultural-oriented businesses such as farm centers, agricultural chemical dealers, etc. with free brochures dealing with riparian corridor issues in order to facilitate increased awareness and dissemination of this information to landowners.
- 4. Facilitate riparian corridor restoration/protection by willing landowners in accordance with applicable guidelines through the use of available funding and/or technical assistance.
- 6. Provide workshops and educational materials regarding BMPs to urban developers, planners, contractors, architects, city, county, and regional planning and zoning boards, and land trusts.
- Objective 1.2: Limit the negative impacts of future channel and floodplain alterations while attempting to mitigate the negative impacts of past channelization and leveling in watershed when and where feasible and prudent.

<u>Strategy</u>: Education of municipal governments, landowners, and the general public regarding the impacts of floodplain development and associated channel and floodplain alteration will be important in limiting future impacts to riparian and stream habitats within the watershed. Input by MDC staff regarding such projects will also continue to be important.

- 1. Work with MDC Resource Science Division, Outreach and Education Division, and appropriate agencies such as MDNR in the development of an educational video illustrating the impacts of stream alterations and floodplain development.
- 2. Seek out and take advantage of opportunities to speak to civic leaders and landowner groups regarding the impacts of stream alterations and floodplain development.
- 3. Continue to provide input regarding all state and federal permitting of projects associated with streams and floodplains of the watershed.
- 4. Request to receive and updated Corps of Engineers GIS compatible dataset of 404 projects within the watershed.
- 5. Assist with additional research efforts regarding the effects of stream alteration and floodplain development.
- 6. Increase floodplain interaction with streams and rivers on MDC-managed areas as per MDC (1998b).

GOAL II: PROTECT AND IMPROVE WATER QUALITY IN THE SOUTH GRAND WATERSHED.

 streams within the watershed are included in the 1998 303d list. All of these streams that are included on the list, with the exception of Big Creek, have impairments associated with coal mining. Big Creek is included on the list due to excessive sedimentation from agriculture non-point sources. In addition to streams listed on the Missouri 303d list, the EPAs Watershed Assessment Tracking and Environmental Results System (WATERS) database as well as the Missouri Unified Watershed assessment include data for additional streams within the watershed which are believed to be impacted due to severe biological impairment resulting from channel alterations, excessive nitrification, and toxic metals/chemicals, and sedimentation. Fourteen fish kills have occurred within the watershed since 1990. Half of these have been the result of discharges from municipal wastewater facilities while four kills were the result of the impacts associated with the operation of Montrose Dam.

Objective 1.1: Assist in ensuring that watershed streams meet or exceed state standards for water quality.

<u>Strategy</u>: MDC lands should be managed to provide good examples of water quality protection and form the basis for MDC efforts to promote water quality protection on both public and private land. Education of the citizenry and land owners on water quality issues and land stewardship is the best hope for improving water quality. Protecting riparian corridors will help to reduce and filter surface runoff as well as provide stream bank and channel stability. Encouragement of appropriate agencies to enforce existing water quality laws will also be required to obtain satisfactory water quality.

- 1. In cooperation with field personnel from all divisions, ensure management activities on public land, as well as MDC sponsored projects on private land, follow best management practices that protect water quality.
- 2. Encourage the establishment of a long-term monitoring project by the MDC Resource Science Division in order to determine the impacts of MDC land management activities on water quality.
- 3. Through media contacts, personal contacts, literature development, and speaking engagements to groups such as area Stream Teams and land owners, inform the public of water quality issues and problems (e.g. agriculture chemical runoff, excessive siltation, animal waste runoff, acid mine drainage, etc.) and best management practices to address these problems.
- 4. In cooperation with regional Private Lands Services Personnel, encourage limiting livestock access in riparian areas and through education and/or incentive programs for private landowners.
- 5. Encourage Stream Team monitoring of basic water quality parameters on MDC areas
- 6. Work with KCPL to find solutions which reduce or eliminate impacts to aquatic biota from Montrose Lake Dam operations.
- 7. Provide input regarding abandoned mine land reclamation projects.
- 8. Encourage and assist with enforcement of existing water quality laws by reviewing 404 permits, cooperating with other state and federal agencies to investigate pollution and fish kill reports, collecting water quality related data, and recommending future measures to protect aquatic communities.
- 9. Encourage the incorporation of water quality data into GIS by appropriate MDC and MDNR staff in order to facilitate effective data updating and analysis. This includes the creation of a 'Designated Use' data layer based on current Rule 10 CSR 20-7.031 of the Rules of Department of Natural Resources Division 20-Clean Water Commission Chapter 7-Water Quality, Tables G and H.

## GOAL III: MAINTAIN THE ABUNDANCE, DIVERSITY, AND DISTRIBUTION OF

AQUATIC BIOTA AT OR ABOVE CURRENT LEVELS WHILE IMPROVING THE QUALITY OF THE GAME FISHERY IN THE SOUTH GRAND WATERSHED.

Status: Since 1960, an assemblage of 60 fish species, 15 mussel species and subspecies, 9 species of snails, 2 crayfish species, and 183 taxa of benthic macro-invertebrates have been identified throughout the South Grand Watershed. A total of 22 species and subspecies of conservation concern are also known to occur in the watershed. These include 10 species of plants, 1 species of insect, 1 species of amphibian, and 10 species of birds. Three species within the watershed are federally listed as threatened. These include the Mead's milkweed, geocarpon, and bald eagle. The aforementioned species are also state listed as endangered. An additional 3 species are also state listed as endangered. These are the northern harrier, greater prairie-chicken, and barn owl. A total of 13 species of gamefish are known to occur within the. These include spotted bass, largemouth bass, white crappie, black crappie, blue catfish, channel catfish, flathead catfish, white bass, striped bass, walleye, and paddlefish.

Objective 1.1: Maintain the diversity, abundance, and distribution of native non-sport fish, and aquatic invertebrate communities at or above current levels.

<u>Strategy</u>: High priority should be placed on protecting species of conservation concern and unique aquatic community assemblages. Focusing enhancement and protective efforts on a few species can be effective in helping other species that share the same habitat. Detecting future changes in aquatic community species composition can be accomplished by conducting routine surveys of fish and invertebrate communities. In cases where significant changes in diversity, abundance, and/or distribution are noted, efforts to determine factors for the changes should be determined through cooperation with MDC Resource Science Division as well as other appropriate agencies and institutions. Cooperation between state and federal natural resource agencies, private land owners, and, in some instances, citizen groups will be necessary to adequately address challenges to aquatic community health.

- 1. Assist with recovery efforts for species of conservation concern within the watershed.
- 2. Survey fish communities in the watershed every 10 years at historical sampling sites using standardized sampling techniques. Establish additional sampling sites as necessary with high priority given to MDC areas. Incorporate data into GIS in order to facilitate documentation of changes in species diversity, abundance, and/or distribution.
- 3. Using GIS, document locations and identify unique fish assemblages associated with natural features and special habitats for inclusion in the Natural Heritage Database.
- 4. Develop a prioritized list of stream reaches on MDC areas needing instream habitat restoration using the following criteria: presence of listed species, extent of forested stream corridor, size of stream, land use, soils, presence of permanent water, presence of sport fish, natural features, and critical habitat.
- 5. If appropriate, recommend research projects in cooperation with MDC Resource Science Division staff to investigate reasons for significant changes in faunal abundance and distribution. Recommend management changes if needed.
- 6. Coordinate with MDC Resource Science Division staff and other groups such as universities

to develop a routine mussel survey schedule for the watershed.

- 7. Coordinate with MDC Resource Science Division staff and other groups such as the MDNR and universities to conduct a survey of benthic invertebrates on all fifth order and larger streams.
- Objective 1.2: Maintain or improve populations of sport fish while maintaining a stable and diverse fish community.

<u>Strategy</u>: Continued management of game fish populations will depend on obtaining adequate surveys in the future to determine the status of the fishery and angler attitudes as well as implementing habitat improvement projects, regulation changes, and other management tools.

- 1. Evaluate warm water sport fish population of the South Grand River with emphasis on catfish and crappie populations.
- 2. In cooperation with MDC Resource Science Division, establish an angler survey for the South Grand Watershed.
- 3. With approval from appropriate agencies such as the United States Army Corps of Engineers and the Missouri Department of Natural Resources, implement instream habitat improvement projects in stream segments of heavy angler pressure which otherwise lack sufficient stream habitat with priority given to public areas.
- Objective 1.3: Prevent detrimental impacts on native fauna of the South Grand Watershed from invasive exotic aquatic species.

<u>Strategy</u>: Preventing the introduction of invasive exotic species into the state is the easiest way to prevent detrimental impacts to native fauna. Public education regarding the prevention of invasive exotic species introduction is the key to preventing the potentially ecologically and economically damaging effects of such introductions. Once a detrimental invasive exotic species becomes established, research will be needed to seek ways to contain or eliminate them.

- 1. Educate the public on the potentially damaging effects of 'bait bucket' introductions to lake and stream communities as well as through the development and use of flyers posted at accesses, newspaper articles, and the Internet.
- 2. Continue MDC Fisheries Division participation in the Missouri Aquaculture Advisory Council (MAAC) and other organizations and advocate controlling the introduction of invasive exotic fauna into state waters.
- 3. Monitor for invasive exotic species (e.g. zebra mussel, Asian clams, etc.) and their potentially harmful effects. This can be performed during fish community surveys, invertebrate samples, etc.
- 4. When invasive exotic species are found, participate in statewide efforts to eliminate before unacceptable levels are reached.

GOAL IV: INCREASE PUBLIC AWARENESS AND PROMOTE WISE USE OF AQUATIC RESOURCES IN THE SOUTH GRAND WATERSHED.

Status: Much of the recreational use within the watershed is associated with Truman Reservoir. Between

1990 and 1997 (no data for 1993 and 1996) anglers took an average of 40,467 fishing trips per year to Truman. Public access to streams of the watershed is very limited.

Objective 4.1: Ensure that aquatic oriented recreational opportunities are readily available in order to promote the wise exploitation and conservation of streams within the watershed.

Strategy: Facilitating aquatic oriented recreational activities on existing MDC areas and encouraging and assisting in the access of stream areas will be important in promoting expanded recreational use of streams in the watershed and thus increasing the number of citizens who have a vested interest in the health of the watershed.

- 1. In cooperation with appropriate MDC staff such as RCTs, DCTs, Design and Development, and Policy Coordination; develop additional stream frontage and access sites on existing MDC areas having permanent stream frontage in a manner that increases public access to streams, but also protects the aquatic resource.
- 2. In cooperation with appropriate MDC staff such as RCTs, DCTs, Design and Development, and Policy Coordination, as well as civic and sportsmen groups; determine the need for additional stream frontage and access sites in the watershed, and procure such frontage and accesses through lease, easement, or purchase.
- Objective 4.2: Increase awareness of stream recreational opportunities and appreciation of stream ecology and advocacy to a level that will encourage a widespread and diversified public interest in the South Grand Watershed.

<u>Strategy</u>: Careful publicity which focuses on riparian oriented species of conservation concern, unique aquatic-oriented communities, as well as abundant recreationally valuable fish populations can promote a continued appreciation of these different types of natural resource

elements. Providing opportunities for the public to learn about stream and wetland ecology will, hopefully, create advocates.

- 1. Include the South Grand River in the MDC annual fishing prospectus.
- 2. Create a regional fishing brochure highlighting stream accesses and gamefish located in the South Grand as well as other watersheds of the region and provide in electronic form (via the MDC public Internet website) and paper form to the public.
- 3. In cooperation with MDC Outreach and Education Division, provide the local and statewide media with timely "How to", "When to" articles and interviews that focus attention on places as well as both consumptive activities such as gigging, bowfishing, float/wade fishing; and non-consumptive activities such as floating and photography.
- 4. Publicize the acquisition, development and opening of new public access and/or stream frontage sites.
- 5. In cooperation with regional field personnel from all divisions, emphasize stream and wetland ecology and good stream and wetland stewardship (utilizing brochures, aquaria, and stream tables where applicable) during presentations to school groups, youth organizations, and private landowner contacts.
- 6. Conduct outdoor youth events, such as Ecology Days at stream sites with field activities that

demonstrate stream ecology and good stream stewardship.

- 7. Facilitate the development and activity of Stream Teams and other groups interested in adopting or otherwise promoting good stewardship and enjoyment of watershed streams.
- 8. Make public presentations in cooperation with regional field personnel from all divisions that focus on best management practices for private landowners.
- 9. Provide promotional, educational, and technical stream materials to groups, fairs and other special events.
- 10. In cooperation with regional field personnel from all divisions, develop brochure which describes the watershed and promotes best management practices within the watershed.

## South Grand Watershed Priority Ranking

